



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appln. Serial No.: 10/648,089

Group Art Unit:

Filing Date: August 26, 2003

Examiner:

Applicant(s): GELLMAN et al.

Attorney Docket No.: 09820.286

Title: HETEROGENEOUS FOLDAMERS CONTAINING  $\alpha$ -,  $\beta$ -, AND/OR  $\Gamma$ -AMINO ACIDS

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

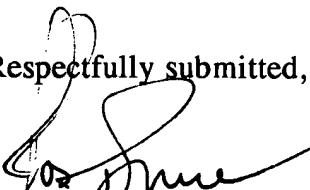
To the Commissioner:

Pursuant to 37 C.F.R. 1.56, applicants submit herewith patents, publications or other information of which they are aware that they believe may be material to the examination of this application, and in respect of which there may be a duty to disclose. The following sections are being submitted for this Information Disclosure Statement:

Form PTO-1449  
 Patents or Publications

Applicants respectfully request that these publications be expressly considered during the prosecution of this application and made of record herein and appear among the "References Cited" on any patent to issue herefrom.

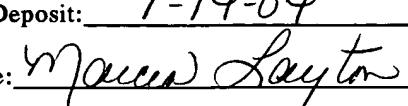
Respectfully submitted,

  
Joseph T. Leone, Reg. No. 37,170  
DEWITT ROSS & STEVENS S.C.  
US Bank Building  
8000 Excelsior Drive, Suite 401  
Madison, Wisconsin 53717-1914  
Telephone: (608) 831-2100  
Facsimile: (608) 831-2106

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as First Class mail in an envelope addressed to:

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Date of Deposit: 1-14-04

Signature: 

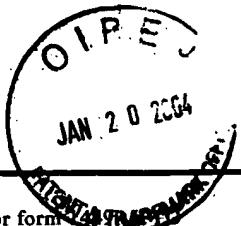


Substitute for form 1449A/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>				<i>Complete if Known</i>	
				Application Number	10/648,089
				Filing Date	August 26, 2003
				First Named Inventor	Samuel H. Gellman
				Group Art Unit	
Sheet	1	of	4	Examiner Name	
				Attorney Docket Number	09820.286

### OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T
		ABELE, GUICHARD, & SEEBACH (1998) <i>"(S)-133-homolysine- and (S)-P3-homoserine-containing 13-peptides: CD spectra in aqueous solution," Helv. Chim. Acta</i> 81:2141	
		APPELLA, D. H.; LEPLAE, P. R.; RAGUSE, T. L.; GELIMAN, S. H. (2000) <i>"(R,R,R)-2,5-Diaminocyclohexanecarboxylic Acid, a Building Block for Water-Soluble, Helix-Forming β-Peptides," J. Org. Chem.</i> 65: 4766-4769	✓
		APPELLA, CHRISTIANSON, KARLE, POWELL, & GELLMAN (1996) <i>"β-Peptide Foldamers: Robust Helix Formation in a New Family of β-Amino Acid Oligomers," J. Am. Chem. Soc.</i> 118:13071	✓
		APPELLA, CHRISTIANSON, KLEIN, POWELL, HUANG, BARCHI, & GELLMAN (1997) <i>"Residue-Based Control of Helix Shape in β-Peptide Oligomers Nature</i> 387:381	✓
		APPELLA, CHRISTIANSON, KARLE, POWELL & GELLMAN (1999) <i>a "Synthesis and Characterization of trans-2-Aminocyclohexanecarboxylic Acid Oligomers: An Unnatural Secondary Structure, and Implications for β-Peptide Tertiary Structure," J. Am. Chem. Soc.</i> 121:6206	✓
		APPELLA, CHRISTIANSON, KLEIN, RICHARDS, POWELL, & GELLMAN (1999) <i>"Synthesis and Characterization of Helix-Forming β-Peptides: trans-2- aminocyclopentanecarboxylic acid oligomers," J. Am. Chem. Soc.</i> 121:7574	
		BARCHI, HUANG, APPELLA, CHRISTIANSON, DURELL, & GELLMAN (2000) <i>"Solution Conformations of Helix-Forming n-Amino Acid Homooligomers," J. Am. Chem. Soc.</i> 122:2711	✓
		BLASKOVICH, LIN, DELARUE, SUN, PARK, COPPOLA, HAMILTON, & SEBTI (2000) <i>"Design of GFB-111, a platelet-derived growth factor binding molecule with antiangiogenic and anticancer activity against human tumors in mice," Nature Biotechnol.</i> 18:1065	✓
		BOLM, SCHIFFERS, DINTER, & GERLACH (2000) <i>"Practical and highly enantioselective ring opening of cyclic meso-anhydrides mediated by cinchona alkaloids," J. Org. Chem.</i> 65:6984	✓
		BOTHNER-BY, STEPHENS, LEE, WARREN, & JEANLOZ R. W. (1984) <i>J. Am. Chem. Soc.</i> (1984) 106:811	✓

Examiner Signature		Date Considered	
--------------------	--	-----------------	--



Substitute for form 1470 <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>				<i>Complete if Known</i>	
				Application Number	10/648,089
				Filing Date	August 26, 2003
				First Named Inventor	Samuel H. Gellman
				Group Art Unit	
Sheet	2	of	4	Examiner Name	
				Attorney Docket Number	09820.286

### OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T
		BRAUNSELIWEILER & ERNST (1983) <i>J. Magn. Reson.</i> 53:521	✓
		CAMMERS-GOODWIN, ALLEN, OSLICK, MCCLURE, LEE & KEMP (1996) "Mechanism of stabilization of helical conformations of polypeptides by water containing trifluoroethanol," <i>J. Am. Chem. Soc.</i> 118:3082.	✓
		CHIN & SCHEPARTZ (2001) "Concerted evolution of structure and function in a miniature protein," <i>J. Am. Chem. Soc.</i> 123:2929	
		CHUNG, HUCK, CHRISTIANSON, STANGER, KRAUTHAUSER, POWELL & GELLMAN (2000) <i>J. Am. Chem. Soc.</i> 122:3995	✓
		COCHRAN (2000) "Antagonists of protein-protein interactions," <i>Chem. Biol.</i> 7: R85	
		COLUCCI, TUNG, PETRI & RICH (1990) <i>J. Org. Chem.</i> 55: 2895-2903	
		CREIGHTON, T. E. (1993) "Proteins: structures and molecular properties," 2nd Edition, p. 14.	
		CURRAN, CHANDLER, KENNEDY, & KEANEY (1996) "N- $\alpha$ -Benzoyl- <i>cis</i> -4-amino-L-20 proLine: a $\gamma$ -turnmimetic, <i>Tetrahedron Lett.</i> 37:1933	
		DADO AND GELLMAN (1994) <i>J. Am. Chem. Soc.</i> 116:1054-1062	✓
		FISK, POWELL, & GELLMAN (2000) <i>J. Am. Chem. Soc.</i> 122:5443.	
		DEGRADO, SCHNEIDER, & HAMURO (1999) <i>Pept. Res.</i> 54:206	
		GELLMAN (1998) <i>Acc. Chem. Res.</i> 31:173	
		GELLMAN (1998) <sup>b</sup> "Minimal model systems for $\beta$ -sheet secondary structure in proteins," <i>Curr. Opin. Chem. Biol.</i> 2:717	✓
		GOMEZ-VIDAL & SILVERMAN (2001) "Short, highly efficient syntheses of protected 3-azido- and 4-azidoproline and their precursors," <i>Org. Lett.</i> 3:2481	✓
		GOODMAN, VERDINI, TONILOLO, PHILLIPS, & BOVEY (1969) <i>Proc. Natl. Acad. Sci. USA</i> 64:444.	✓
		GUNG, ZOU, STALCUP, & COTTRELL, (1999) "Characterization of a water-soluble, helical $\beta$ -peptide," <i>J. Org. Chem.</i> 64:2176.	✓

Examiner Signature		Date Consider d	
--------------------	--	-----------------	--

O I P  
JAN 20 2004  
SEARCHED INDEXED  
TRANSMISSED

				<i>Complete if Known</i>	
Substitute for form 1449 X-1000 <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>				Application Number	10/648,089
				Filing Date	August 26, 2003
				First Named Inventor	Samuel H. Gellman
				Group Art Unit	
				Examiner Name	
Sheet	3	of	4	Attorney Docket Number	09820.286

### OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T
		HAMURO et al. (1999) <i>J. Am. Chem. Soc.</i> 121:12200-12201.	
		HANESSIAN, LUO, SCHAUM, MICHNICK (1998) "Design of secondary structures in unnatural peptides: stable helical $\gamma$ -tetra-, hexa-, and octapeptides and consequences of $\alpha$ -substitution," <i>J. Am. Chem. Soc.</i> 120:8569.	✓
		HANESSIAN, LUO, SCHAUM (1999) <i>Tetrahedron Lett.</i> 40:4925.	✓
		HERLT, KIBBY, RICKARDS (1981) <i>Aust. J. Chem.</i> 34:1319-1324	
		HINTERMANN, GADEMANN, JAUN, SEEBACH (1998) " $\gamma$ -Peptides forming more stable 10 secondary structures than $\alpha$ -peptides: synthesis and helical NMR-solution structure of the $\gamma$ -hexapeptide analog of H-(Val-Ala-Leu) <sub>2</sub> -OH," <i>Helv. Chem. Acta</i> 81:983.	
		KOBAYASHI, KAMIYAMA, & OHNO (1990) "Chiral synthon obtained with pig-liver esterase--introduction of chiral centers into cyclohexene skeleton," <i>Chem. Pharm. Bull.</i> 38:350-354.	✓
		KOBAYASHI, KAMIYAMA, & OHNO (1990) "The first enantioselective synthesis of fortamine, the 1,4-diaminocyclitol moiety of fortimicin-A, by chemicoenzymatic approach," <i>J. Org. Chem.</i> 55:1169	✓
		LACROIX, KORTEMME, LOPEZ DO LA PAZ, & SERRANO (1999) <i>Curr. Opin. Struct. Biol.</i> 9:487	✓
		LEE, SYUD, WANG, GELLMAN (2001) "Diversity in Short $\beta$ -Peptide 12-Helices: High Resolution Structural Analysis in Aqueous Solution of a Hexamer Containing Sulfonylated Pyrrolidine Residues," <i>J. Am. Chem. Soc.</i> 123:7721	✓
		LEPLAE, UMEZAWA, LEE, GELLMAN (2001) <i>J. Org. Chem.</i> 66:5629-5632	
		LUO & BALDWIN (1997) "Mechanism of helix induction by trifluoroethanol: a framework for extrapolating the helix-forming properties of peptides from trifluoroethanol/water mixtures back to water," <i>Biochemistry</i> 36:8413	
		MACURA & ERNST (1980) <i>Mol. Phys.</i> 41:95	
		MERRIFIELD, R. B. (1963) "Solid Phase Peptide Synthesis. I. The Synthesis of a Tetrapeptide," <i>J. Am. Chem. Soc.</i> 85:2149-2154	✓

Examiner Signature		Date Considered	
--------------------	--	-----------------	--



				<i>Complete if Known</i>	
Substitute for form 1449 REPLACES INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Application Number	10/648,089
				Filing Date	August 26, 2003
				First Named Inventor	Samuel H. Gellman
				Group Art Unit	
				Examiner Name	
Sheet	4	of	4	Attorney Docket Number	09820.286

### OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T
		RAGOTHAMA, AWASTHI, BALARAM, (1998) "β-Hairpin nucleation by Pro-Glyβ-turns. Comparison of D-Pro-Gly and L-Pro-Gly sequences in an apolar octapeptide," <i>J. Chem. Soc., Perkin Trans. 2</i> :137	✓
		SEEBACH et al. (1996)* <i>Helv. Chem. Acta.</i> 79:913-941	
		SEEBACH & MATTHEWS (1997) <i>J. Chem. Soc., Chem. Commun.</i> 2015-2022	✓
		SEEBACH, BRENNER, RUEPING, SCHWEIZER, JAUN (2001) "Preparation and determination of x-ray-crystal and NMR-solution structures of γ <sup>234</sup> -peptides," <i>J. Chem. Soc., Chem. Commun.</i> 207	✓
		SUHARA et al. (1996) <i>Tetrahedron Lett.</i> 37(10):1575-1578	✓
		WALGERS, LEE, & CAMMERS-GOODWIN, (1998) "An indirect chaotropic mechanism for the stabilization of helix conformation of peptides in aqueous trifluoroethanol and hexafluoro-2-propanol," <i>J. Am. Chem. Soc.</i> 120:5073.	✓
		WANG, LIU, ZHANG, SHAN, HAN, SRINIVASULA, CROCE, ALNEMRI, & HUANG (2000) "Structure-based discovery of an organic compound that binds Bcl-2 protein and induces apoptosis of tumor cells," <i>Proc. Natl. Acad. Sci. USA</i> 97:7124.	✓
		WOLL, LAI, GUZEI, TAYLOR, SMITH, GELLMAN, "Parallel Sheet Secondary Structur 20 in γ-Peptides," <i>J. Am. Chem. Soc.</i> , in press	✓
		Zutshi, Brickner, & Chmielewski (1998) "Inhibiting the assembly of protein-protein interfaces," <i>Curr. Opin. Chem. Biol.</i> 2:62.	✓

Examiner Signature		Date Considered	
--------------------	--	-----------------	--